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ABSTRACT

The effectiveness of strategies employed by colleges and universities to reverse a trend of declining enrollment was studied. A comparison was undertaken of 59 institutions that were successful (S) and 54 institutions that were unsuccessful (U) in reversing enrollment decline. In addition to questionnaire response data, extensive demographic data were collected from the U.S. Bureau of Census. The introduction of new or expanded academic programs was significantly more often employed by the S institutions than by the U institutions. Conclusions emerging from the findings include the following: institutional reorganization and/or change in institutional mission, for certain institutions, was a highly effective response strategy; for some institutions, retention of existing students was as important, or even more important, than recruitment of new students; enrollment decline was more likely to worsen in institutions with higher tuition increases and higher percentages of acceptances than it was in institutions with smaller increases in these two variables. It is suggested that if institutional action will not be able to reverse a quantitative trend of downward enrollment, it should direct attention to the qualitative dimensions of decline. (SW)

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AN ANALYSIS OF INSTITUTIONAL RESPONSE AND ENVIRONMENTAL CONSTRAINTS WITH RESPECT TO THE PATTERNS OF INSTITUTIONAL ENROLLMENT DECLINE IN AMERICAN HIGHER EDUCATION

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Barry Gerald Cohen

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A paper presented at the 1982 Conference of the Association for the Study of Higher Education

INTRODUCTION

The enrollments in institutions of higher education increased dramatically during the 1960s, stabilized during the 1970s, and are virtually certain to decline during the 1980s. The accordian-like expansion and contraction of American higher education during the course of these three decades has been aptly reflected by the labels attached to each of them: The sixties are now referred to nostalgically as the "golden years" (Jenny & Wynn, 1971); we have experienced the "steady state" of the 1970s (Glenny, 1974-75); and we are urged to brace ourselves for the "management of decline" as we enter the 1980s (Boulding, 1975). Observers of higher education are predicting the problems: curtailment of programs, closing of colleges, surplus of faculty and staff, underutilization of plant, unaffordable tuition, difficulty in placement of graduates, built-in constraints to flexibility (i.e., tenure commitments, high fixed costs), and overall management of a declining enterprise.

In many ways, Kenneth Boulding (1975) has sounded the keynote for the age in his widely quoted essay, "The Management of Decline." In that essay, Boulding called for new leadership under decline, suggesting that a declining enterprise is qualitatively different from a growing enterprise, and as of yet, little understood. He called for basic study into the problem of decline as follows:

> I would like to see institutes, workshops, and courses all over the country in the creative management of decline. Before we can do this, however, we need to study decline through research programs, beginning perhaps with the educational system, where decline is already upon us. (p. 8)

Finally, he wonders whether education will adapt well to decline (as did agriculture) or adapt poorly (as did the railroads).

There is evidence that institutions of higher education are not at all in a good condition to adapt to decline. Mayhew (1974) has identified three phases in the history of any social institution:

> The first stage is one of dynamic growth; social expectations rise, there is excitement, expansion and self-confidence;...the second is one of conflict as social expectations exceed the capabilities of the institution; there is frustration, anger and recrimination...The third period is one of neglect, reduced expectation, indifference, passivity, and stagnation... managers should be prepared to exist professionally without eminence and to deal effectively with those minor matters that in aggregate often make a difference. (pp. 15-16)

Mayhew's description rings strikingly true for higher education in the 1980s. The inference to be drawn from Mayhew's social trajectory is that there are deep structural roots to any given point in the development of an institution, and that the ability of the institution to adjust to new circumstances is severely constrained by both its own history and its surrounding social environment.

March (1974) pursues one step further the consequences of the ambiguity and limits of human response to decline in education.

> The context of decline demands humility from educational leaders... In particular, we need to acknowledge two kinds of limitations on managerial heroics: (1) the limits of human control over human destiny; and (2) the limits of personal incentives as motives of human behavior. ...We have problems without solutions; root causes without means of affecting them; solutions without capability of using them. (pp. 136, 137; underlining mine)

Although he does not make the connection explicit, March's skepticism concerning the impact of leadership on an institution was documented in another study (Cohen & March, 1974), entitled Leadership and Ambiguity. In that work, after intensive interviews on 42 campuses with presidents and their major coworkers, the authors found that the president has only modest control over the events of campus life, and that his efforts could be easily nullified by outside events, thus calling into question the ability of college and universities to respond directly and deliberately to the anticipated problem of enrollment decline. Finally, the usually optimistic Carnegie Foundation (1975) acknowledged, after reviewing the interview responses of a national sample of college presidents, that the early consequences of reduced growth have been largely negative--perceived reduction of quality in programs, students, and faculty, coupled with a psychological sense of claustrophobia and dread on the campus.

How effectively can colleges and universities adapt to declining enrollment? Rodekohr (1975) discovered statistically significant differences between growing and declining school districts with respect to variables such as staffing patterns,

financial situation, and socioeconomic status. Although his study focused on elementary and secondary education, his identification of variables differentiating growing from declining districts has obvious application to higher education, and suggests that the critical determinants of decline are external in nature. In the higher education universe, Glenny, Shea, Ryule, and Freschi (1976) examined the responses of colleges and universities to "the new realities of declining rates of enrollment and financial support" (page 1). This study will draw upon Glenny al.'s identification of possible institutional responses, but will extend their work by examining the effectiveness of these strategies in reversing a trend of declining enrollment.

METHODOLOGY

The study will proceed by identifying institutions of higher education which have been successful in reversing a trend of declining enrollment, as well as a control group of institutions which were not successful in reversing an enrollment decline. The study will seek to explore the differences between these two groups of institutions in an effort to better understand the success of the former. A number of summary definitions are presented at this point in order to introduce several important terms that will be used in the study:

Successful Institution: An institution which experienced enrollment decline for three or more years during the period 1966-76, and which subsequently showed an enrollment increase for two or more consecutive years. The enrollment decline must be 10% or greater, and the subsequent enrollment increase must be 5% or greater. Hereafter referred to as "S" Institution or "S."[1]

Unsuccessful Institution: An institution which experienced enrollment decline for three or more years during the period 1966-1976 and which did not subsequently reverse that decline. The enrollment decline must be 10% or greater. Hereafter referred to as "U" Institution or "U."

Institutional Enrollment Pattern: A categorical dichotomous variable consisting of the two categories above, namely, "S" institutions and "U" institutions. Hereafter referred to as IEP.

The definitions above apply to the types of institutions examined in this study.

In addition, two other terms will be defined which summarize the types of variables which will be analyzed for all institutions--"S" and "U"--in the study.

External Variable: A variable which is largely beyond the control of an individual institution in the short run. It is a variable which is essentially a given in the institution's environment. Job market conditions, external Financial Aid, and college setting (i.e., urban, suburban, rural) are examples of External Variables. Hereafter capitalized.

Response Variable: A variable which is largely under the institution's control. It is a variable in which the extent of effort is a choice made by the institution. Increase in admissions staff, change in academic programs, change in institutional mission, and change in tuition are examples of Response Variables. Hereafter capitalized.

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[1]These definitions are not totally complete. For the complete definition including selection criteria, see Appendix A.

Since shifting demographic trends are expected to be responsible, in large measure, for the anticipated enrollment decline in higher education, special attention will be given to the demographic conditions in the area surrounding each institution in a very preliminary effort to define and measure the "population pool from which an institution draws its clientele." Demographic variables will therefore be considered a special subset of External Variables and defined as follows:

> Demographic Variable: A variable reflecting the population statistics for either total population or college age population in designated geographic units surrounding an institution and for selected designated time periods. College age population of home county in 1970 is an example of a Demographic Variable. Hereafter capitalized.

Using the definitions above, the central focus of this study is to examine the impact of the independent variables (External Variables and Response Variables) upon the dependent variable (IEP--Institutional Enrollment Pattern--consisting of the two categories of "S" institutions and "U" institutions). Three general hypothesis have been formulated in order to test this relationship empirically:

> Hypothesis 1: Differences in selected External Variables contribute to differences in IEP.
>
> Hypothesis 2: Differences in selected Response Variables contribute to differences in IEP.
>
> Hypothesis 3: Differences in particular combinations of External Variables and Response Variables contribute to differences in IEP.

In order to test the three general hypotheses, a sample (N = 245) of "S" institutions (Successful) and "U" institutions (Unsuccessful) was selected from a universe of approximately

3000 American institutions of higher education. The institutions were selected according to preestablished criteria (see Appendix A) concerning enrollment patterns, using a 10-year longitudinal enrollment data base supplied by the National Center for Educational Statistics (NCES) as derived from annual HEGIS data. After the sample was generated, a profile was created with respect to three descriptive variables--Enrollment Size, Region of the Country, and Carnegie Classification--in order to examine the extent to which the sample was representative of a national sample of colleges and universities, and the extent to which the "S" and "U" subsample groups were reasonably homogeneous with respect to these descriptive variables. The sample was found to be satisfactory with respect to both representativeness and homogeneity.

A list of External Variables and Response Variables was identified from the higher education literature (see Appendix B) and from discussion with administrators and researchers in higher education.

A questionnaire survey was selected as the most practicable method of obtaining modest coverage of a national sample of higher education institutions at reasonable cost. Accordingly, a questionnaire was designed, pilot tested, revised, and distributed to the 245 sample institutions. The pilot study was believed to have been successful in improving the reliability of the questionnaire instrument, as well as in generating some additional important variables to be tested in the study. It should be noted that the questionnaire data were self-reported and that the questionnaire used fixed alternative responses.

Possible bias resulting from these methodologies, while not believed to be serious, is acknowledged.

After a follow-up mailing, 113 usable responses were received, constituting a 46% response rate. The responses were approximately evenly divided between "S" institutions (N = 59) and "U" institutions (N = 54). An analysis of non-respondents with respect to the three descriptive categories showed no objective evidence indicating the presence of a response bias. Overall, the response rate and response profile were regarded as satisfactory.

In addition to the data obtained directly from the questionnaire, extensive demographic data were collected directly from official U.S. Bureau of Census (1971, 1973, 1976, 1977) documents in a preliminary effort to analyze the "population pool from which an institution draws its clientele." It was felt that official census data could provide corroborative objective evidence in support of questionnaire data on demographics. Supplemental data were also collected pertaining to Carnegie Classification, change in tuition level, change in institutional control, and change in institutional sex. It was decided that these data could be collected most reliably directly from the appropriate source documents (Carnegie Commission, 1973; NCES, 1972, 1977).

For data analysis, following Rodekohr (1975), means were calculated and reported for the "S" and "U" subsamples, respectively, as well as for the total response sample. A significance test was undertaken (t test) to identify those variables in which there was a significant difference in means between the "S" and "U" sample groups.

RESULTS

Summary of External Variables

There were consistent significant differences between the "Successful" and "Unsuccessful" sample groups with respect to External Variables (see Table 1). On this basis, the hypothesis concerning the impact of External Variables upon institutional enrollment was accepted. Three findings, in particular, strongly supported analyses found in selected works of higher education literature:

1. Differences between the two sample groups for two Demographic Variables - pool of high school graduates and population pool of all students - were significant beyond the .001 level. Supplemental demographic data from census documents (U.S. Bureau of the Census, 1971, 1973, 1976, 1977) were ambiguous, but did appear to indicate that the demographics of larger geographic units such as the state were relevant to institutional enrollment. This finding is consistent with a widespread belief that demographics will have a dominant impact in the higher education environment of the future.

2. Differences in job market conditions were also found to be significant beyond the .001 level. This economic variable is believed to influence the rate of enrollment in higher education, and believed, by some, to be second in importance, if not as important, as demographics, in the higher education environment of the future. The study provides empirical support as to its influence on enrollment.

Table 1

Summary of Difference in Means for "Unsuccessful" and "Successful" Sample Groups For External Variables

Variable Definition[a]	Source[b]	All	Unsuccessful	Successful	Significance Level (t test)
Institutions Opened	Q11	0.7	0.6	0.8	NS
Institutions Closed	Q12	0.3	0.2	0.3	NS
Net Enrollment Change in Neighboring Institutions[c]	Q13	2772.0	2737.0	2798.0	NS
Change in Population Pool of High School Graduates in State and County[c]	Q14	3.3	2.8	3.8	.000
Change in Population Pool of All Potential Students in State and County[c]	Q15	3.2	2.8	3.6	.000
College Setting (urban, suburban, rural	Q16	3.3	3.1	3.4	NS
Availability of Transportation to Campus[c]	Q17	2.9	2.8	2.9	NS
Degrees Offered[c]	Q18	3.6	3.2	4.0	.000
Externally Set Enrollment Ceiling on Admission Criteria[c]	Q19	2.9	2.8	3.0	NS

Table 1 (continued)

Variable Definition[a]	Source[b]	All	Unsuccessful	Successful	Significance Level (t test)
Change in Enrollment at Neighboring Institutions[c]	Q20	2.6	2.3	2.8	.005
Change in State and Federal Financial Aid Policy[c]	Q21	3.7	3.5	4.0	.05
Labor Market for Your Graduates	Q22	3.3	2.8	3.7	.000

[a]See Questionnaire pp. 2-3 for reference (Appendix C).

[b]Source: Q = Questionnaire

[c]Scale derived from questionnaire as follows: 1 = Very Negative; 2 = Mildly Negative; 3 = None; 4 = Mildly POsitive; 5 = Very Positive

3. Several tests, including two questionnaire variables and one external source of data (Carnegie Commission, 1973) show significant difference in institutional type between "S" and "U" institutions. Community colleges are more often "Successful," Comprehensive Institutions are more often "Unsuccessful," and Liberal Arts institutions were fairly well balanced. This finding is consistent with predictions of a "diversity of outlooks" for various institutional constituencies of higher education.

4. Two other variables--change in enrollment at neighboring institutions and change in governmental financial aid policy--also revealed significant differences between the two sample groups. These variables were considered indicative of the important environmental influences of competition and governmental regulation, respectively.

In summary, six of the nine External Variables tested on the questionnaire were statistically significant at or above the .05 level. It was concluded, therefore, that "Successful" and "Unsuccessful" institutions operate under essentially different environmental conditions.

Summary of Response Variables

Introduction of new or expanded academic programs emerged, according to every measure, as a highly significant Response Variable. Its mean increase score was significantly higher (.01 level) for "S" institutions as compared to "U" institutions (see Table 2). Also, a similar but slightly different question concerning change in academic degree programs likewise showed significant differences (.01 level) between the two sample

Table 2

Summary of Differences in Means for "Unsuccessful" and "Successful" Sample Groups for Response Variables

Variable Definition[a]	Source[b]	All	Unsuccessful	Successful	Significance Level (t test)
Percentage Change in Professional Admissions Staff	Q24	29.0	27.5	30.4	NS
Percentage Change in Vocational or Career Counseling Staff	Q25	20.2	19.0	21.3	NS
Percentage Change in Institutional Financial Aid	!26	39.5	33.8	44.9	NS
Percentage Change in Promotional Costs for Student Recruitment	Q27	38.0	38.5	37.5	NS
Percentage Change in Ratio of Acceptances:Applications	Q28	9.8	10.6	9.1	NS
Percentage Change in Number of Faculty, Students, Alumni in Recruitment Effort	Q29	28.3	28.1	28.5	NS
Percentage Change in Continuing Education Courses Offered	Q30	30.2	24.8	35.6	NS
Percentage Change in Number of Academic Degree Granting Programs	Q31	15.0	9.2	20.8	.01

Table 2 (continued)

Variable Definition[a]	Source[b]	All	Unsuccessful	Successful	Significance Level (t test)
Change in Reliance on Market or Needs Survey[c]	Q33	3.1	3.1	3.1	NS
Change in Effort to Recruit New Target Populations of Students[c]	Q34	3.7	3.5	3.9	NS
Introduction of New or Expanded Academic Programs[c]	Q35	3.6	3.3	3.9	.01
Change in Recruitment of Students in a New or Expanded Geographic Area[c]	Q36	3.3	3.2	3.4	NS
Change in Institutional Mission[c]	Q37	2.6	2.5	2.6	NS
Change in Institutional Organization[c]	Q38	2.9	2.9	3.0	NS
Change in Packaging of Programs[c]	Q39	2.7	2.8	2.7	NS
Change in Policy for Transfer Students[c]	Q40	2.3	2.3	2.4	NS

Table 2 (continued)

Variable Definition[a]	Source[b]	All	Unsuccessful	Successful	Significance Level (t test)
Tuition Level, 1972[d]	N	1317	1576	1060	.001
Tuition Level, 1976[d]	N	1659	2039	1317	.000
Percentage Change in Tuition, 1972-1976	C	28	36	20	.01
Price Elasticity Index, 1972-1976[e]	C	- 0.32	- 1.12	0.41	.000

[a]See Questionnaire, pp. 4-6, for reference and slightly more complete definitions.

[b]Source as follows: Q = Questionnaire; N = NCES data; C = Calculated.

[c]Scale derived from questionnaire as follows: 1 = Decrease; 2 = No Change; 3 = Slight Increase; 4 = Modest Increase; 5 = Extensive Increase.

[d]These two variables are not strictly speaking Response Variables; they are provided as reference for the discussion concerning change in tuition.

[e]Defined as the ratio of change in enrollment to change in tuition. (See Jackson & Weathersby, 1975, p. 626.)

groups. Since these were the only two questionnaire Response Variables showing significant differences between the means, this was considered strong evidence that change in academic program could help to reverse an enrollment decline. Of the 15 Response Variables analyzed individually in this part of the study (see Table 2), it is the only Response Variable that appears to have the capability to do so.

Three other conclusions emerged:

1. Institutional reorganization and/or change in institutional mission, for certain institutions, proved to be a highly effective response strategy.

2. Attrition is an important dimension of enrollment decline. For some institutions, retention of existing students is as important, or even more important than recruitment of new students.

3. There are two responses many institutions can make as a matter of policy that do not involve, as do most other responses, a commitment of additional resources. These responses are an increase in the percentage of acceptances and a relatively high increase in tuition. Interestingly, both these strategies appear to be counterproductive. The price elasticity index, a measure of responsiveness in demand to change in price, affected "Unsuccessful" institutions significantly more adversely than "Successful" institutions. Enrollment decline was more likely to worsen in institutions with (a) higher tuition increases and (b) higher percentage of acceptances than it was in institutions with smaller increases in these two variables. It is possible

that the strategies that are easiest to implement in the short run may be the most costly in the long run.

DISCUSSION

Can "managerial heroics" make a difference in an environment of decline? Given the nature of the higher education environment, as well as the organizational structure of institutions of higher education, March (1974) had been skeptical of the possibilities for effective institutional action, especially under conditions of decline. With one very important qualification, this study suggests that March's concerns are well founded. For External Variables, statistically significant differences were found between those institutions that reversed an enrollment decline and those that did not. For Response Variables, with one major exception there were not significant differences between the two sample groups. The exception was "change in academic programs," which, by several measures, was a significant discriminator between the "Successful" and "Unsuccessful" institutions. With this qualification borne in mind, this study suggests in a preliminary manner that: (a) the ability of an institution to reverse an enrollment decline is predominantly a function of variables that are external to the institution, and (b) reversal of enrollment decline, with one important exception, is not responsive to "managerial heroics."

The results of this study therefore point in two distinctly different directions. One is to further explore the theoretical and practical implications of the one effective response variable, namely change in academic program. Its theoretical importance is that however strong the external constraints, and however ineffective the other response strategies, there is at least one adaptation to decline which appears to be effective. Its practical importance lies in the fact that it offers a concrete response strategy for institutions to pursue. It suggests that institutions faced with decline should identify the academic interests of potential students, and then shift institutional resources to support new or expanded academic programs accordingly. It also suggests that the ideal recruitment strategy may be academic programs that serve student needs, and that this strategy may be more effective than direct recruitment-oriented strategies such as increases in admissions staff or increases in promotional costs. The irony of this finding is that it may indicate that institutions of higher education have been underrating the sophistication of students as consumers of instructional services.

The second direction in which the study points is to a greater acceptance of institutional enrollment decline, given the dominance of external variables. This may suggest a focus on improving academic quality in an environment of decline. Cyert (1978) emphasizes that effective institutional adaptation must begin with acceptance of the reality of enrollment decline as an environmental given:

> The first step that must be taken by the administration and faculty of a contracting university is to recognize that the organization can reach a viable equilibrium position at a smaller size than it had in the past. Most institutions run into trouble because one variable, student enrollment, slips, and no adjustment is made in the administration, faculty, staff, space, and the corresponding budgets. (p. 33)

The expected dominance of External Variables, as suggested by the findings of the present study, appears to indicate that for most institutions, there will be no choice but to achieve "a viable equilibrium at a smaller size." If, in many cases, institutional action will not be able to make a significant difference with respect to reversing a quantitative trend of downward enrollment, it will be imperative for higher education research and practice to direct its attention to the qualitative dimensions of decline, where it remains possible that institutional action can make a difference.

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Appendix A

CRITERIA FOR SELECTION OF SAMPLE INSTITUTIONS

General criteria: All institutions of higher education in the 50 states which appear on the EDSTAT/HEGIS nationwide longitudinal data base from 1966 through 1975 shall be considered the sample universe. Institutional enrollment, as used below, shall be defined as total FTE enrollment for a given institution for a given year.

Specific criteria for "Unsuccessful institution":

1. Institutional enrollment shows a decrease in at least three out of four consecutive years when compared to the preceding year, and

2. Institutional enrollment in the final year of the sequence is at least 10% less than the enrollment in the first year of the sequence, and

3. The institution does not satisfy the criteria for "successful" as indicated below and does not qualify for automatic exclusion, as below.

Specific criteria for "Successful institution":

1. Meets criteria 1 and 2, as above and

2. In at least two out of three of the years immediately following the terminal year of the sequence above, institutional enrollment shows an increase when compared to the preceding year, and

3. Institutional enrollment in the final year of this second sequence is at least 5% greater than the enrollment in the first year of this same sequence.

Specific criteria for automatic exclusion, superseding all other criteria:

1. Institutional enrollment is less than 100 in any year in the 10 year period.

2. Institutional enrollment exhibits this particular pattern: decline through 1973, increase in 1974, and decreased by more than 2% in 1975.

3. Institutional enrollment exhibits a one year aberration during the period under consideration, defined as a variance of 50% or greater from each of the two surrounding year.

4. Having satisfied the criteria for "successful" by 1972, the institution then declines again to satisfy the criteria for "unsuccessful" (i.e., down, up, down).

5. The Institution is a Research University I under the Carnegie Commission Classification.

APPENDIX B

Summary of References in Which Variables Used in This Study Were Identified

Variable[a]	Anderson (1977)	Minter & Bowen (1977)	Carnegie Foundation (1975)	Freeman (1976)	Glenny et al. (1976)	Lanier & Anderson (1975)	Lupton et al. (1976)	McPherson (1978)	Henderson & Plummer (1978)
A. External									
Q14--High school graduates			x		x			x	x
Q15--Population pool, all students			x		x			x	x
Q16--College setting			x					x	
Q18--Degrees offered			x			x			
Q20--Enrollment at neighboring institutions					x				
Q21--External financial aid policy					x			x	
Q22--Labor market for graduates			x	x				x	
Institutional type (supplemental data)		x	x		x	x		x	
Other demographic variables (supplemental data)			x						
B. Response									
Q24--Admissions staff		x			x				
Q25--Counseling staff					x				
Q26--Institutional financial aid					x				
Q28--Acceptances:application policy		x	x		x			x	
Q29--Alumni, faculty recruiting									x
Q30--Continuing education courses					x				
Q31--Academic degree programs offered		x	x		x			x	x
Q33--Market or needs survey					x				
Q34--New target population of students	x		x		x				x
Q35--New/expanded academic programs		x	x		x			x	x
Q37--Change in institutional mission	x		x					x	
Q39--Packaging of programs									x
Change in tuition (supplemental data)					x		x	x	

[a] Variables not listed were obtained from the pilot study.